Peabody, Daniel (EGLE)

From: Peabody, Daniel (EGLE)
Sent: Saturday, June 6, 2020 6:22 PM
To: saric.james@epa.gov
Cc: Williams, Lisa; Miller, Megen (AG); Greg Baker; Ruhala, Sydney (EGLE); Von Wallmenich, Theo/DET; Roberts, Keegan; john kern; Bennett, Brian; Kirchner, Scott
Subject: EGLE Comments_Kalamazoo River _OU5 Area 1_95% Sediment Remedial Design - Crown Vantage Side Channel
Attachments: EGLE_Comments_KalamazooRiver_OU5_Area1 95% Sediment Remedial Design Report CVSC.pdf

Jim,

Attached are EGLE's comments on the 95% Sediment Remedial Design – Crown Vantage Side Channel. Please let me know if you have any questions. Due to work restrictions associated with COVID, a cover letter and hard copy will be mailed next week.

Thanks,

Daniel Peabody
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Kalamazoo River Superfund Site
Area 1 95% Sediment Remedial Design - Crown Vantage Side Channel
April 30, 2020

GENERAL COMMENTS

Commenting Organization: EGLE
General Comment #1: EGLE appreciates coordination with subject matter experts regarding the native mussel population in and near the proposed dredge areas to determine what actions may be necessary to protect the mussel population. It may also be beneficial to engage with other subject matter experts in Water Resources and the Department of Natural Resources Fisheries Division to develop short- and long-term turbidity monitoring goals. The document proposes 50 NTU or 1.5 times the upstream turbidity as the level at which dredging practices will be reassessed.

Commenting Organization: EGLE
General Comment #2: EGLE believes the post-dredge management and confirmation sampling is not adequate and needs significant revisions. Firstly, the post-dredge management decision tree provided in Figure 10-1 proposes that a 5-point composite confirmation sample will be collected in cells that meet the post-dredge surface elevation criteria. If the composite analytical result is ≤1 ppm, a cell is proposed to be complete. For results >1 ppm but less <10 ppm, a backfill cover of at least 1 foot is proposed to manage the residual concentrations. If results are >10 ppm, re-dredging is proposed to take place if a hard bottom has not yet been reached. Please provide an explanation for selecting 10 ppm as the criteria for re-dredging. EGLE is concerned that this criterion may leave a significant amount of material in place with PCB concentrations >10 ppm. EGLE has provided a revised decision tree for consideration.

Post-Dredge Management Decision Tree for Crown Vantage Side Channel

1 Dredge

2 Survey post-dredge surface elevation

3 Elevation met for 90% of area and no high spots >6" ?

No

Yes

4 Collect 5-point composite sample for cell (one 0-12" core per aliquot)

5 Result ≤1ppm?

No

Yes

Re-dredge DMU and re-sample.

A

A.) Is 5-point composite result < or = 1 mg/kg? ***OR***
B.) Is 5-point composite < or = 2.5 ppm and DMU to be covered by minimum of 2 ft of backfill?

NOTE: Without accurate quantification of PCB concentrations deeper beneath the dredge prism (> 12"), organic carbon content of backfill materials, extent of groundwater-surface water interaction, and site-specific advective seepage velocities, EGLE notes that potential recontamination of backfill materials by advectiving dissolved contaminants from the underlying sediment bed cannot be fully understood. EGLE has developed its backfill recommendations based on best professional judgement and historic assessments of regional groundwater flows.

Yes

Yes

Has hard pan/refusal been reached or has Box A been undertaken once?

No

6b Place backfill?

9 Cell Completed

Notes:

- Dredge cell = cell (5-point composite sample area)
- Specific exceptions are detailed in Table 10-1
- Dredge prism target elevations based on dense pre-design investigation grid to reach clean margins (underlying material < 1 ppm total PCBs).
- Top of backfill will not exceed pre-existing bed elevation
- If concentrations continue to exceed outlined criteria after re-dredge attempt where high concentration residuals are predicted or refusal/hard bottom elevation is reached, the residuals will be managed with a cover (i.e., to manage residuals/fluff over clean margin).

DRAFT

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE
Area 1
95% Remedial Design Crown Vantage Side Channel

DREDGE MANAGEMENT DECISION TREE

Prepared by/Date: JJH 04/27/2020
Checked by/Date: MTP 04/27/2020
Project Number: 3293170001

wood.

FIGURE 10-1

Secondly, Section 10.3 states that "before re-dredging occurs, the individual aliquots from the 5-point composite confirmation sample may be analyzed and only the portions of the dredge cell representing the aliquots with concentrations above 10 ppm will be re-dredged." EGLE disagrees with this approach. The intent of the randomized composite sample is to provide an average PCB concentration representative over a given area. If only portions of the dredge cell are to be re-dredged, additional discrete samples would be needed to fully delineate the areas with concentrations above the proposed re-dredge criteria (proposed at 10 ppm). Given that and the known spatial variability of PCBs in sediments at the site, EGLE requests that the entire dredge cell be re-dredged.

Lastly, Table 10-1 states that if a composite sample exceeds 10 ppm, and the results are likely due to generated residuals, then the alternative verification requirement is to analyze 0-6" that represents "generated residuals" and 6-12" that represents "undisturbed residuals". If only the 0-6" sample exceeds 10 ppm, then use a residual cover or backfill. EGLE disagrees with this approach. Under this scenario, post-dredge management should follow the same decision tree as dredge cells without residuals (i.e., the dredge cell would need to be re-dredged). Residuals should not factor into decision making, as previously discussed during technical Work Group meetings.

Commenting Organization: EGLE
General Comment #3: EGLE continues to have concerns regarding the accuracy/representativeness of total PCB concentrations in the Area 1 pre-design investigation (PDI) data. EGLE understands that efforts to rectify these concerns and identify appropriate total PCB quantification protocols have been initiated. EGLE supports these efforts and will happily engage with any stakeholders on this topic upon their request.

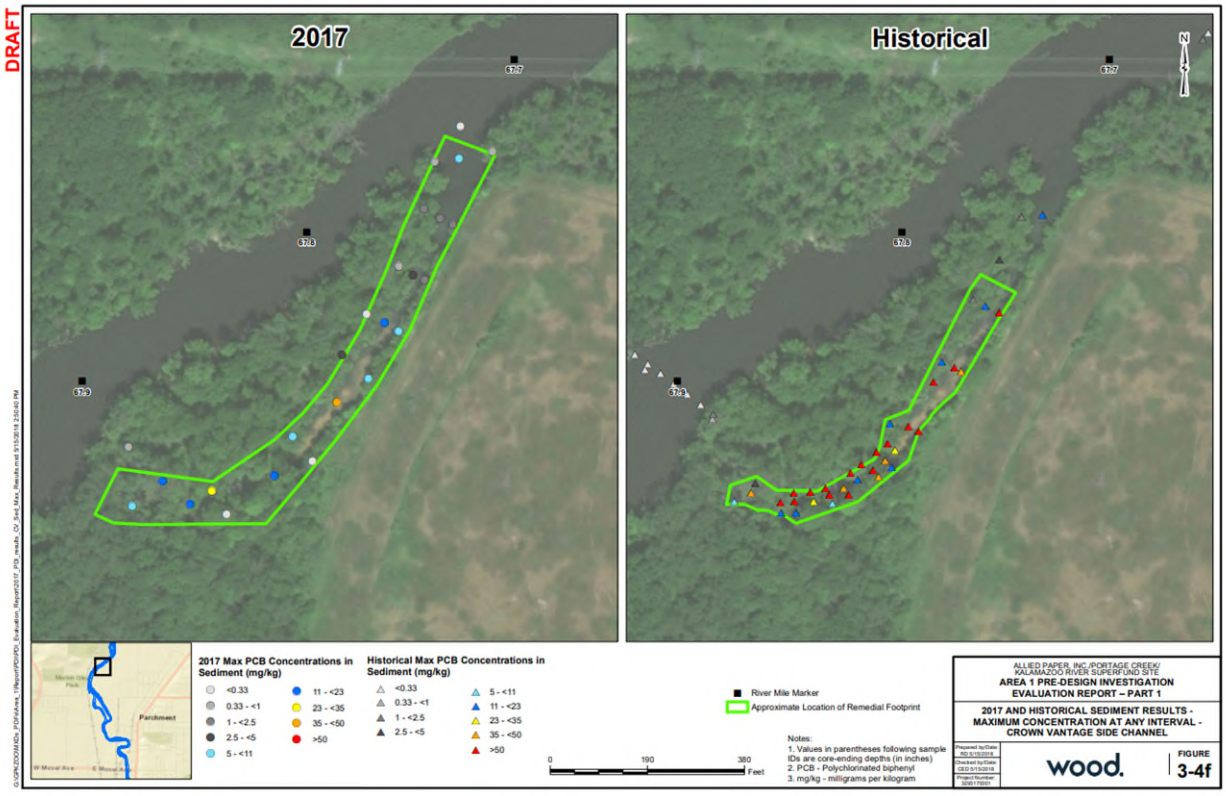
Commenting Organization: EGLE
General Comment #4: The decision to abandon SRI data and move forward with PDI data and currently proposed dredge plan may underestimate the concentration of material that will be encountered in the field and potentially result in an incomplete removal and/or exposure or liberation of underlying sediments that are also known to be contaminated. Ignoring historical data and the conceptual model could also lead to inappropriate handling and disposal of dredged sediments. EGLE continues to believe that the conceptual model developed by GP and supported by the Agencies for the crown vantage side channel (CVSC) lends itself consideration of all data and not just the PDI data, which we also know is biased low. Relevant text related to the conceptual model is inserted below.

The Crown Vantage area is bordered on the north and west by the Kalamazoo River, and a shallow side channel separates a small island from the landfill at the northwestern portion of the property (see Figure I4-1). Historical information suggests the channel was open at both ends and conveyed flow; however, aerial photographs indicate that sometime between 1967 and 1974 the upstream end was partially filled in, possibly to limit flow or to provide access to the island. Currently, the side channel remains dammed at the upper end (see photograph, at right), resulting in a relatively stagnant backwater area except during periods of high water when the channel may convey active flow, depending on river levels.

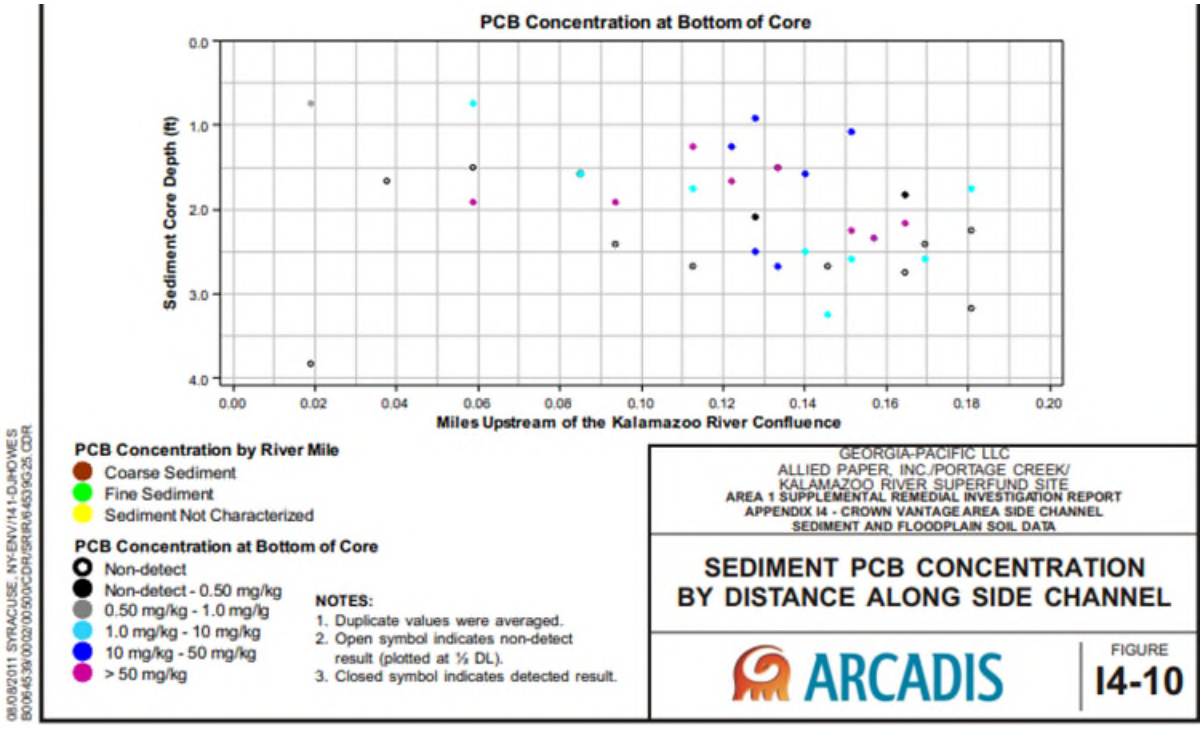
While the supplemental remedial investigation (SRI) and PDI sampling events were somewhat comparable in size (189 SRI samples and 123 PDI samples), the SRI data was generally much

higher in concentration as shown in Figure 3-4f from the PDI Report (inserted below). The PCB concentrations in sediments are also discussed in the text of each document although the descriptions provide vastly different views of the nature and extent of PCB contamination in the CVSC. Portions of relevant text from the SRI and PDI report is included below.

- The 2012 SRI states, "PCB concentrations in samples collected at sediment transect locations in 2000 (four focused samples) and 2007/2009 (189 samples) ranged from non-detect to 320 mg/kg (at CVT-07-01 [17-24 inches]) with a median PCB concentration of 5.2 mg/kg. PCB concentrations in approximately 19% (37 of 193) of sediment samples collected within the side channel were less than 1.0 mg/kg, while approximately 12% (23 of 193) exceeded 50 mg/kg PCB. All PCB concentrations greater than 50 mg/kg occurred in the subsurface intervals. PCBs are disproportionately located in areas where these fine-grained sediments have accumulated over time, particularly in the upper portion of the side channel between Transects CVT-08 (river mile 0.18) and CVT-05 (river mile 0.11)."
- The 2018 PDI Report states, "Historical data collected in the Crown Vantage side channel indicated elevated sediment PCB concentrations at depths from the surface to greater than 24 inches throughout the side channel, particularly in the northern (downstream) portion (Figures 2-4f and 3-4f). Results from the PDI investigation indicate PCB concentrations below 1 mg/kg (including non-detects) for 89 of the 123 samples. The maximum PCB concentration is 45.1 mg/kg in Interval 3 at A1-SED-CV10. No 2017 sample in this area exceeded 50 mg/kg. The elevated PCB concentrations in the side channel are limited to the top 24 inches of sediment, except for location CV04 where elevated PCB concentrations extend to a depth of at least 33 inches (refusal)."



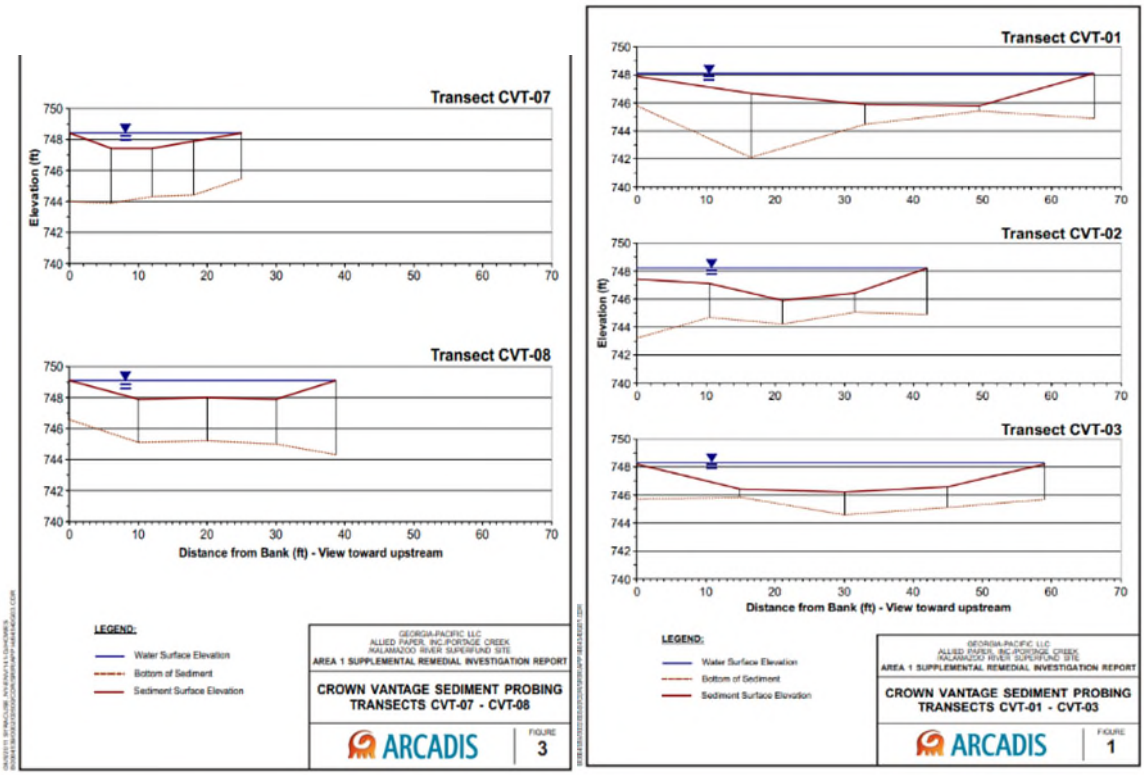
The 2020 95% Sediment Remedial Design - CVSC states PDI sampling concluded that the PCB impacts are limited to the upper 2-feet and proposes a 3-foot cut in DMU 1 and a 2-foot cut in DMU 2. However, the SRI text (summarized above) and data collected by GP and shown in Figure I4-10 in the 2012 SRI Report (inserted below) shows PCB impacts above 1 mg/kg present in sediments below 2-feet. For reference, on the figure below, DMU1 would extend from approximately 0.00 to 0.14 miles and DMU2 would extend from approximately 0.14 miles to 0.18 miles.

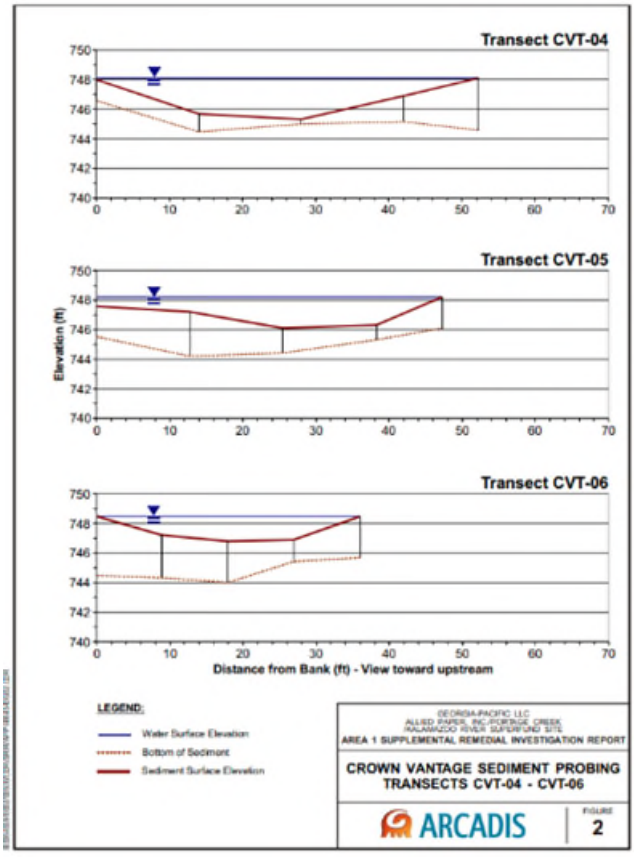


The SRI also described the contact between the generally coarser and less organic rich sediments that were deposited prior to damming off the side channel and the fine grained organic rich deposits that accumulated as water flow through this area was reduced, as well as presence of significant PCB impacts deeper than 2-feet, the heterogeneous nature of PCB distribution within localized areas in the CVSC, and variable sediment thicknesses across the channel. Portions of relevant text from Appendix I4 of the Area 1 SRI is inserted below.

- *Deeper than two feet, solids content generally increases, while organic carbon concentrations and silt and clay content decreases, indicative of finer material being deposited over coarser material. However, in sediments deeper than two feet, all PCB detections were greater than 2.9 mg/kg. These data are consistent with the changes in the side channel from a regularly-flowing side channel to an area that only carries water during high-flow events.*
- *Included in the PCB data are results from location FF-28, which was sampled in 2000 and again in 2009. The elevated concentration observed at this location in 2000 (66 mg/kg at depth) was not observed in the 2009 core from the same location, although the cores were otherwise similar. Whereas the 2000 core had a maximum PCB concentration of 66 mg/kg in the deepest interval (14-23 inches), the 2009 core from the same location had a maximum PCB concentration of 4.9 mg/kg at the surface (0- to-6-inch depth).*

- *Generally, sediment thickness was greatest at the ends of the transects, and lowest in the middle of the channel.*





EGLE recommends the following items be considered in the next phase of design:

1. The 100% CVSC Design Report (future submittal) should discuss how the SRI data and heterogeneous nature of PCB contamination in the side channel over time and space was considered in the design since the 95% Sediment Remedial Design - CVSC does not adequately describe how this data was utilized.
2. Encountering the more coarse, underlying substrate within the side channel should not be used as the sole line of evidence to determine when dredging is complete. During remedial action, the dredge operators should be made aware of the unique conditions in the side channel and anticipate encountering the underlying, more-coarse substrate. But they should recognize that at least portions of the layer are known to be impacted by PCBs above the remedial goal of 1 mg/kg.
3. The 3-foot dredge cut for DMU2 should be extended to at least cover the locations where SRI data showed impacts below 2-feet (approx. 0.03-miles further than what is proposed) and then adjusted further downstream, if necessary, based on results of confirmation sampling.
4. Targeted removal of additional deeper soft sediments to account for greater soft sediment thicknesses than the proposed dredge cuts in DMU1 and DMU2, particularly near the edge of the channel. Variation in soft sediment thickness across the channel may not be as apparent in the PDI data due to the randomized sampling approach that was used but is clearly present in the transect based sampling and probing completed during the SRI.

Commenting Organization: EGLE
General Comment #5: The document references several work plans and supporting documents that will be developed by the Respondents as part of the remedial design (RD) and remedial action (RA) and states that the documents will be reviewed and approved by the Respondents Representative. This includes but is not limited to the following documents: Dredging Work Plan, Construction Work Plan, Dredge and Backfill Work Plan, Construction QA/QC Plan, etc. Please clarify whether the USEPA, EGLE, and other stakeholders will have an opportunity to review and comment on these submittals.

Commenting Organization: EGLE
General Comment #6: The 95% Sediment Remedial Design – CVSC suggests using sheet-pile to block the upper and lower ends of the side channel and then complete the remediation "in the wet" using excavators. While excavation "in the dry" would require management of a larger volume of water it offers significantly more control over construction and EGLE believes the side channel conditions described in General Comment #2 are conducive to completing excavation "in the dry". The 95% Sediment Remedial Design – CVSC did not provide any information on why excavation "in the wet" was selected as the remedial strategy. Please provide additional information on why the decision was made to proceed with excavation "in the wet" versus "in the dry".

Commenting Organization: EGLE
General Comment #7: Please ensure the Natural Resource Damage Trustees are copied on submittals so that they have an opportunity to provide comments.

Commenting Organization: EGLE

General Comment #8: The floodplain surrounding the side channel near the landfill is largely composed of paper waste that is described as "debris" in the SRI. These materials, although outside of the PCB footprint, likely contain other contaminants and care should be taken to not disturb them. If actions include building temporary stabilization pads in this location than the "debris" within the temporary staging areas should also be removed upon completion of the RA.

Commenting Organization: EGLE
General Comment #9: The potential for more frequent and larger high energy flow events resulting from climate change should be incorporated into any RD and RA. This would include ensuring that excavated materials are immediately removed from the CVSC corridor, as possible, and not stockpiled along the edge of the channel or in the low-lying floodplains. Currently, the document proposes to use the 25-year flood elevation as the boundary below which no staging or stockpiling will occur.

SPECIFIC COMMENTS

Commenting Organization: EGLE
Section: 1.3 Remedial Action Objectives and Remedy of Record **Page #:** 1-2
Specific Comment #1: The text reads as follows: "The ability to achieve FRGs in fish tissue, however, may be limited by background and off-site PCB inputs to the system, as evidenced by the fish tissue concentrations observed in the upstream reference areas." As EGLE has commented previously, all ongoing background and off-site PCB sources should be quantified so that beneficial impacts of RAs can be properly assessed. Without quantitative measures of ongoing sources, it will be difficult, or potentially impossible, to determine if RAs are having their intended impacts, and subsequent five-year reviews will likely be inconclusive.

Commenting Organization: EGLE
Section: 2.1.4.2.1 NPDES and 7.2 Discharge Criteria **Page #:** 2-2, 7-1
Specific Comment #2: Please note that the discharge criteria provided by EGLE's Water Resources Division to meet the substantive requirements of a National Pollutant Discharge Elimination System (NPDES) permit for discharge of treated water to the Kalamazoo River may include PFAS. While it is anticipated that water treatment technologies utilized for PCBs will also be effective for other contaminants (such as PFAS) the Respondents should be communicating recent findings at the site to the Water Resources Division to ensure protective criteria are established.

Commenting Organization: EGLE
Section: 3.2.2 River Hydrology **Page #:** 3-2
Specific Comment #3: The text reads as follows: "The more significant impact of Morrow Dam is likely the trapping of Kalamazoo River sediment, especially bedload, flowing into Morrow Lake. Morrow Lake is an approximately 950-acre lake with normal water elevation at approximately 776 feet mean sea level. The lake has the ability to substantially limit sediment passage to the downstream river." The reduced input of "clean" sediment to the river system below Morrow Lake significantly limits natural recovery potential. This limited input of "clean" sediments to the site should be considered in any future evaluation of Monitored Natural Recovery.

Commenting Organization: EGLE
Section: 3.2.2 River Hydrology **Page #:** 3-2
Specific Comment #4: The text reads as follows: "These data are provided for the period since 1988 only because, as discussed above, the average annual flow has been increasing over time." These flow increases, and the potential for more and larger high energy flow events resulting from climate change, should be incorporated into any RD and RA. The Crown Vantage side channel will likely not be prone to high energy scour events due to the upper end of the channel being disconnected from the main river stem. However, any remedial actions in the main river stem should incorporate considerations of more frequent and larger high energy flow events.

Commenting Organization: EGLE
Section: 3.2.3 Hydraulics **Page #: 3-4**
Specific Comment #5: The text reads as follows: "Average channel velocity profiles and average channel shear stress profiles for the same set of flows are plotted on Figure- 3-2 and -3-3, respectively." EGLE reiterates its concerns regarding the use of averaged channel sheer stress profiles. As noted during workgroup meetings, erosion and deposition patterns typically vary across a river's cross-section and utilizing cross-sectional averages to inform decision making does not acknowledge the realities of erosion patterns in riverbeds. Future RDs and RAs should reflect the fact that scour can occur in one portion of a river cross section but not the other, and that erosion patterns may not be apparent when utilizing cross-sectional averages.

Commenting Organization: EGLE
Section: 3.3 Sediment Sampling **Page #:** 3-4
Specific Comment #6: The text reads as follows: "Pre-Design Investigation (PDI) sampling was completed in the Crown Vantage side channel in 2017. Results of the PDI sampling indicate PCB concentrations in the side channel are limited to the top 24 inches of sediment, except for one location where elevated PCB concentration extended to a depth of at least 33 inches (refusal)." As presented in EGLE's General Comments 3 and 4, EGLE has concerns regarding the accuracy/representativeness of total PCB concentrations from recent RP sampling efforts. Any confirmation sampling should utilize the modified analytical techniques currently being developed, provided that those techniques are proven to provide more representative total PCB quantifications. EGLE will happily engage with any stakeholders on this topic upon their request.

Commenting Organization: EGLE
Section: 4.1 Basis of 95% Sediment Design **Page #:** 4-1
Specific Comment #7: The text reads as follows: "Removals will be completed with real-time kinematic (RTK) differential global positioning system (GPS) control. RTK-GPS positioning accuracy of ±1-foot horizontal and ±0.1-foot vertical will allow removal in defined areas to defined elevations." Any bucket/dredge mounted RTK-GPS system should be calibrated multiple times per day. Debris (such as the woody debris prevalent throughout the Kalamazoo River) impacting bucket/dredge mounted RTK-GPS systems can drastically affect survey accuracy and the resulting dredge prism. In general, it would be expected that an RTK GPS would provide significantly better horizontal accuracy than what is provided in the text.

Commenting Organization: EGLE

Section: 4.2.6 Utilities/Structure Protection **Page #:** 4-6
Specific Comment #8: The text reads as follows: "As part of the scope of work, the Contractor will be required to install and improve the existing temporary access roads within the limits of the Crown Vantage Landfill Cap." Based on previous project experiences at site time critical removal action areas, locations and extents of any haul roads or staging areas be surveyed using a RTK-GPS positioning system. Those locations and extents should also be recorded in project documents and shared with EPA and EGLE.

Commenting Organization: EGLE
Section: 4.2.9 Residual Cover and Backfill **Page #:** 4-8
Specific Comment #9: Section 4.2.9 states that "It is expected that backfill will be placed to pre-dredge elevations in DMU [dredge management unit] 2, and that backfill will be placed to 1 foot below pre-dredge elevations in DMU 1." Any and all dredge prisms should be returned to pre-dredge elevations following removal. The design document provides no technical justification for not returning DMU 1 to pre-dredge elevations.

Commenting Organization: EGLE
Section: 7.2.2 Decontamination Activities **Page #:** 7-1
Specific Comment #10: Section 7.2.2 states that a wash station will be constructed to decontaminate equipment entering and leaving the site. Please provide the source(s) of the wash water that will be used.

Commenting Organization: EGLE
Section: 9.2 Bank Stabilization **Page #:** 9-1
Specific Comment #11: The text reads as follows: "Bank restoration and stabilization will occur for areas that have been disturbed to the extent that the bank may be destabilized by construction activities to provide bank access, build temporary access roads, and perform dredging." The pre-construction condition of all banks within and adjacent to planned active remedial areas be documented via photographs to better assess any construction impacts.

Commenting Organization: EGLE
Section: 10.1.2 Dissolved Oxygen **Page #:** 10-1
Specific Comment #12: The last sentence states, "The EGLE Water Quality Division required that DO be maintained at ≥ 5 milligrams per liter (mg/L) during previous dredge projects on the Kalamazoo River." This should state "EGLE's Water Resources Division". Please revise accordingly.

Commenting Organization: EGLE
Section: 10.2.1 Fugitive Dust Monitor**ing** **Page #:** 10-2
Specific Comment #13: Section 10.2.1 states that if needed, water spray may be used to suppress dust emissions. Please provide the source(s) of the water that will be used.

Commenting Organization: EGLE
Section: Table 10-1 **Page #:** n/a
Specific Comment #14: The table text provides a scenario where: "If composite sample exceeds 10 ppm, and results are likely due to generated residuals." Insufficient PDI delineation or erroneous PDI analytical chemistry results could also be the cause of composite sampling

exceeding 10 ppm, and EGLE does not concur with using residuals estimation techniques and the inherent uncertainty associated with them for decision making. Remedial decisions should be driven by empirical evidence. 10 ppm materials should be addressed with further removal under the revised dredge decision flow chart (Figure 10-1) provided by EGLE (see General Comment #2).

Commenting Organization: EGLE
Section: Figure 4-1 **Page #:** n/a
Specific Comment #15: Please include the depth interval associated with the maximum PCB concentration shown at each sampling location on Figure 4-1.

Specific Comment #16: See EGLE's edited PDF of Figure 10-1 under General Comment #2 for comments on the proposed dredge decision flow chart. Supporting text in the design document should be updated accordingly.